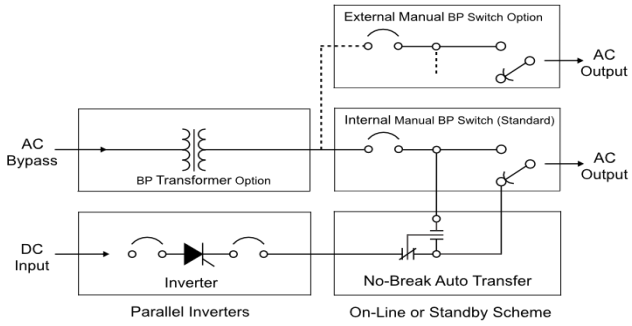
Clean, sine-wave AC power ensures a high availability of mission-critical safety devices, controls, alarms, switchgear, instrumentation, and computers. **StatiVolt Inverters & DC-AC UPS** are designed and built for decades of robust, industrial duty and field serviceability. Time-proven for 40 years.



AC kVA 1ph	AC kVA 3ph*	Vac 1ph	Vac 3ph	Input Vdc
1.2	**3.6**	120	208, 600	48, 125
2.0	**6.0**	120, 220	208, 400	48, 125
3.0	**9.0**	120, 220	208, 400	48, 125
5.0	**15.0**	120, 220	208, 400	125, 250
7.5	**22.5**	120	208	125, 250
10.0	**30.0**	120, 240	208	125, 250
15.0	**45.0**	120	208	125
20.0	**NA**	120	NA	125, 250
25.0	**NA**	120	NA	125, 250
30.0	**NA**	120, 230	NA	125
40.0	**NA**	120	NA	125
60.0	**NA**	120	NA	125

* Each 3-phase inverter is comprised of 3 single phase inverters, each rated at 1/3 of the total kVA rating, the outputs of which are 120 electrical degrees apart to supply 3-phase AC power.

Features

Reliability by Design

- Pure sine-wave AC power
- Low frequency, soft-switching
- Fast (≤ 4 ms) source transfer
- Natural convection cooled
- 30 year design life

Low DC Input Voltage

- 24, 48, 125, 250 V DC nominal
- Battery-only start-up capability

Protection

- In, out, bypass circuit breakers
- Fail-safe output current limiting
- Transformer isolation
- Fail-safe output V control
- Inherent surge rejection
- Inherent AC fault limiting

Versatile Functions & Options

- DC Input Telecom Filter
- DC Input Low V Shutdown
- Dual AC Output Voltages
- Bypass Transformer Option
- Wrap-around manual bypass
- Special Utility Options
- Ethernet / RS485 status PLC

Warranty & Service

- 3 year full warranty
- Fully field serviceable
- 20 year parts availability

Contents

Inverter Specs

Power Conversion Design
- SCR chopper, commutation transformer
- Tuned ferro-resonant output
- Pure sine-wave AC power

Output Control
- Fail-safe, closed loop control
- Magnetic shunt regulation
- True oscillator output frequency

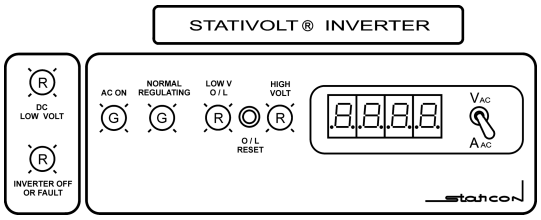
Steady-State V_{ac} & F Regulation
- ±1%, Vdc nom to 117% V_{dc} nom)
- -5%, at 88% of V_{dc} nom, full load)
- ±0.10 Hz frequency, 1 Hz / s slew rate

Overload Capacity
- 125% for 30 min, 150% for 1 min
- 200% for ≤ 16 ms, load fault clearing

Annunciation & Meters
- Standard annunciation (each phase):

  V+A AC Meter digital, 2% accuracy

  AC On green LED
  Normal Reg. green LED
  Low V O/L red LED, dry contacts
  High V red LED, dry contacts
  DC Low V red LED, dry contacts
  DC Off / Fault red LED, dry contacts
- Contacts are form 'C' contacts rated: 0.6A @ 120 Vac and 2A @ 30 Vdc



Typical Full Load Efficiencies (%)

AC kVA 1ph	Nominal DC Voltage 48	125	250
1.2 - 2		80	
3	75	85	
5 - 15		85	90
20 - 60		85	90

Protection
- DC breaker rated I ≈ 1.5 x full load IDC
- AC breaker rated I ≈ 1.3 x full load IAC
- Transformer electrical isolation
- I2 t breaker coordinated SCRs & diodes
- I limiting set to start at ≈ 150% of full load at ≥ nominal DC input voltage

DC Input Reflected Ripple Voltage
- ≤ 1% rms (without battery)
- ≤ 0.5% rms (on typical battery)
- Noise filter option (< 32 dBrnC noise)

Output AC V Range
- ± 10% of nominal (± 5% regulator adjust, ± 5% transformer tap adjust)

Dynamic AC V Response
- ±5% for 50% resistive step-loads
- ±10% for 100% resistive step-loads
- Recovery < 17 ms (50% step-load)

Parallel Inverter Operation
- Load sharing within 10% of unit IAC

Audible Noise
- 55-65 dBA (at 1 m, rating dependent)

Output Distortion & Noise
- THD is < 6% (phase-neutral)
- 120 dB common mode noise rejection
- 60 dB transverse mode attenuation

Surge Tolerance
- Inherent I / O surge protection

Electromagnetic Interference
- Conducted / radiated EMI within CSA C108.8 & FCC Part 15 Class B limits

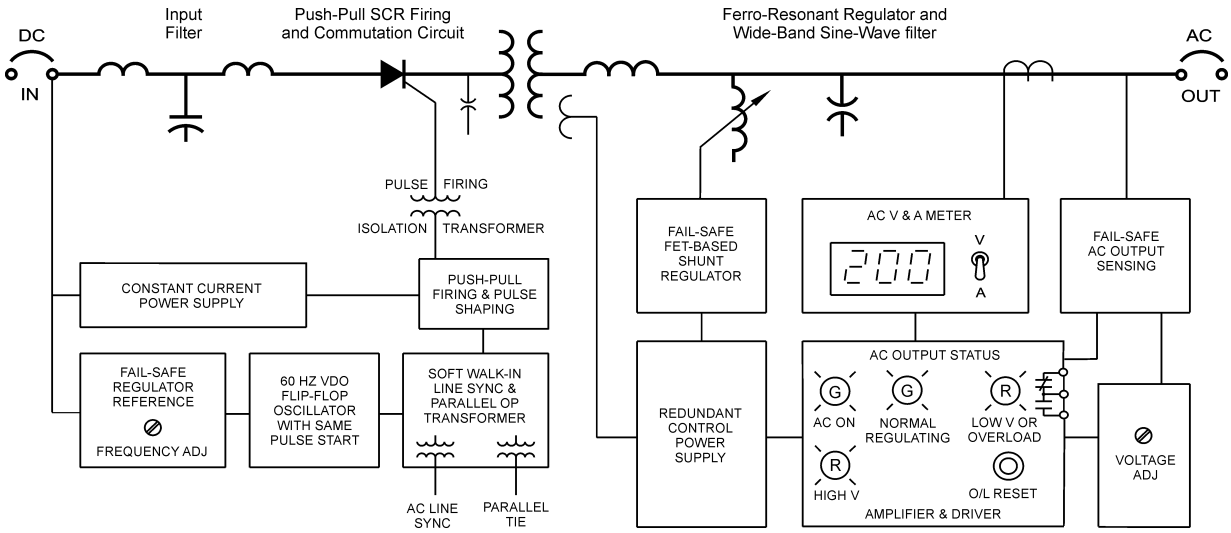
Wiring
- Stranded 16 AWG control wires
- Plastic sleeve-type wire markers
- Wire (≤ 10 AWG) connection ferrules

Cabinets
- NEMA type 1, IEC 60529 IP 20
- Front accessible, side / top cable entry
- 14 / 10 gage steel panels / mounts
- Powder-coated, baked enamel finishes

Environmental Requirements
- Natural convection cooled: top, side, rear clearances required for air flow.
- -20°C to +40°C continuous operation
- RH < 95% non-condensing

Reliability
- MTBF is 120,000 h
- MTTR is 1 hour (spares on / near site)

Design & Test Standards
- CSA SPE-1000 inspected & approved
- Built to CSA C22.2 No. 107.1
- Magnetics designed for Class H, 180°C



Oscillator Module

AC Voltage Regulator & Status Module

Single-Line Diagram with Control Functions

No-Break Auto Transfer Specs (On-Line or Standby)

Transfer Design (Robust Fast Break)

- On-Line: DC / inverter fail: ≤ 4 ms
- Standby: AC source / fail: ≤ 8 ms
- V sensing, transistor-based logic
- Fast contactor-based transfer
- 30 year design life

Protection

- Bypass AC breaker, 120% of inverter A
- 8 kV contactor impulse withstand V
- Isolated and / or fused electronics

Voltage Sensing

- Differential V sensing relay
- Dropout V, nominal V to -20% adj.
- Pickup V, nominal V to -20% adj.

Transfer Logic

- Voltage sensing initiated, DC powered
- Transistor-based switch
- Rated @ 500 V, 12 A
- Energizes coil @ 10 Vdc 180 mA
- Auto re-transfer, 60 s delayed return
- Internal PB transfer test switch

Contactor(s)

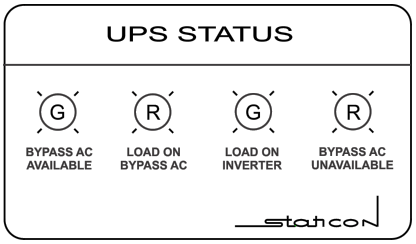
- Type AEG LS-K
- 4 Poles (2 NO, 2 NC), 110 A / pole
- Rated @ 690 Vac
- 2 parallel contactors used for high Current 1ph and all 3ph UPS's

Meters

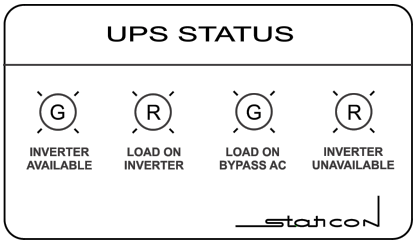
- 1Φ Load AC V&A digital, 2% accuracy
- 3Φ Load AC V&A analog, 2% accuracy
- Optional
  - AC Frequency analog, 2% accuracy
  - DC V&A digital, 1% accuracy switch selectable

Annunciation

- **On-Line Transfer Annunciation**
  - Bypass Avail. grn LED
  - Load on Bypass red LED, dry contacts
  - Load on Inverter grn LED, dry contacts
  - Bypass Unavail. Red LED
- Set of dry (NO+NC) contacts rated: 0.6A @ 120 Vac and 2A @ 20 Vdc



- **Standby Transfer Annunciation**
  - Inverter Avail. grn LED
  - Load on Inverter red LED, dry contacts
  - Load on Bypass grn LED, dry contacts
  - Inverter Unavail. Red LED
- Set of dry (NO+NC) contacts rated: 0.6A @ 120Vac and 2A @20Vdc



Wiring

- Stranded 16 AWG control wires
- Plastic sleeve-type wire markers
- Wire (≤ 10 AWG) connection ferrules

Environmental Requirements

- -20°C to +40°C continuous operation
- RH < 95% non-condensing

Reliability

- MTBF is 560 k hrs
- MTTR is 1 hour (spares on / near site)

Design & Test Standards

- CSA SPE-1000 inspected & approved
- IEC 60947, UL 508 certified contactors
- CSA C22.2 #14 certified contactors

Manual Maintenance Bypass Switch Specs

Manual Switch Design

- Rotary cam switch, 2 positions
- Robust fast break ≤ ½ cycle (8 ms)
- Isolates inverter UPS for maintenance
- Provision for padlocking in one position
- Type Kraus & Naimer C125 & C315 ®
- 2, 3 & 4 pole switches
- c/w silver plated contacts

Operational Ratings

- C125 rated @ 600 Vac, 150 A / pole
- C315 rated @ 600 Vac, 240 A / pole

Protection

- 6 kV switch impulse withstand V
- 2000 A for 1 s switch withstand Amps
- Rated 5 kA short circuit current

Annunciation

- Load on Inverter dry contacts
- Load on Bypass dry contacts
- Set of NO+NC (form C) contacts rated: 0.6A @ 120 Vac and 2A @ 30 Vdc

Housing

- In UPS cabinet, externally operable
- Separate section above inverter
- External (separate cabinet) option

Wiring

- Stranded 16 AWG control wires
- Plastic sleeve-type wire markers
- Wire (≤ 10 AWG) connection ferrules

Environmental Requirements

- -20°C to +40°C continuous operation
- RH < 95% non-condensing

Reliability

- Electrical life (B10d): 15 k cycles (K&N)
- Per IEEE Std 493-2007, Annex Q, #188
- MTTF is 4.2 M hrs
- MDT is 1.1 hrs (mean down time)

Design & Test Standards

- CSA SPE-1000 inspected & approved
- CSA C22.2 No.14 certified switches
- IEC 60947, UL 508 certified switches

1∅ DC-AC UPS Cabinets

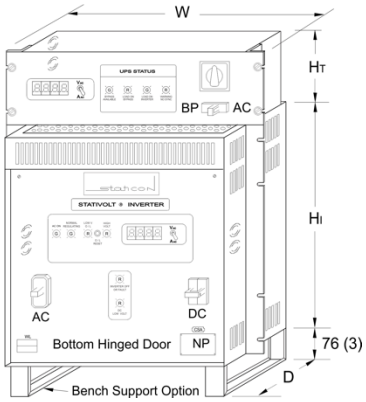
Bypass Transformer

The optional bypass transformer is housed in the transfer section of any inverter UPS.

Dual Redundant Systems

Parallel, floor mount, inverter systems (2 parallel inverters combined with one transfer) are 2x the width and weight as shown in the table.

1 Phase Output kVA	Cabinet Style	Dimensions mm (in) H_T	H_I	W	D	Weight kg (lbs)
1.2	R, B	222 (8.75)	622 (24.5)	533 (21)	508 (20)	65 (143)
2	R, B	222 (8.75)	622 (24.5)	533 (21)	508 (20)	85 (187)
3	R, B	222 (8.75)	622 (24.5)	533 (21)	508 (20)	105 (231)
5	F1	305 (12)	1600 (63)	610 (24)	610 (24)	240 (529)
7.5	F1	305 (12)	1600 (63)	610 (24)	610 (24)	310 (683)
10	F1	457 (18)	1600 (63)	762 (30)	762 (30)	350 (772)
15	F1	457 (18)	1600 (63)	762 (30)	762 (30)	480 (1058)
20	F1	457 (18)	1600 (63)	914 (36)	914 (36)	670 (1477)
25	F1	457 (18)	1600 (63)	914 (36)	914 (36)	840 (1852)
30	F2	NA	2057 (81)	1524 (60)	762 (30)	1150 (2921)
40	F2	NA	2057 (81)	1524 (60)	762 (30)	1280 (2821)
60	F2	NA	2057 (81)	1676 (66)	1067 (42)	1850 (4079)

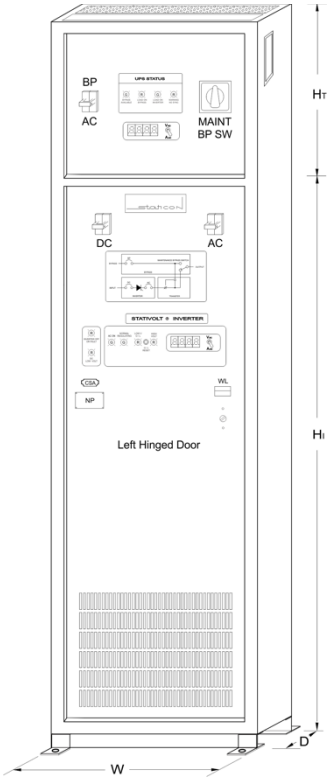


H_T transfer section height

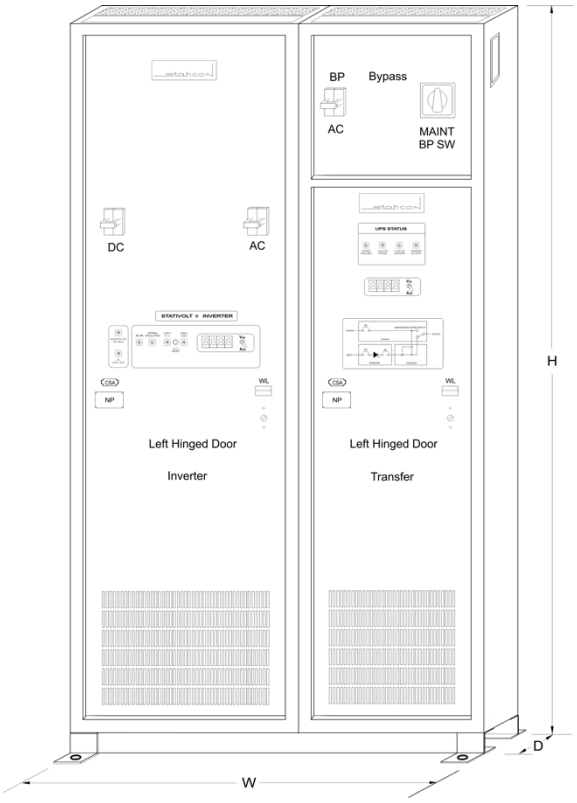
H_I inverter section height

External maintenance bypass switch option **Me** requires an additional rack panel or wall mount cabinet. Size to be determined at time of quote.

(R)ack (23 inch) Mount or (B)ench Mount



(F1) Floor Mount



(F2) Floor Mount

Construction

CSA / NEMA 1 cabinets. Front access.
14 / 10 gage steel panels / mounting channels.
Standard finish is ASA 61 grey, baked enamel.

CSA / NEMA 2 cabinets with drip shields (option **N2**) are an extra 152 mm (6 in) higher to allow for proper convection cooling under the drip shield.

Side cable entry for rack mount cabinets.
Top cable entry for floor mount cabinets.

Required Ventilation Clearance:
Rack Cabs: 89 (3.5) space all sides.

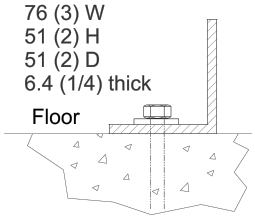
Notes

Actual systems may vary from these cabinet standards according to job-specific options or custom requirements.

All dimensions in **mm** (**inches**).
Drawings are not to scale.

Floor Anchor Detail

76 (3) W
51 (2) H
51 (2) D
6.4 (1/4) thick



3∅ DC-AC UPS Cabinets

3 Phase Output kVA	Cabinet Style	Dimensions mm (in) H_T	H_I	W	D	Weight kg (lbs)
15	F3	457 (18)	1600 (63)	1829 (72)	610 (24)	720 (1584)
22.5	F3	457 (18)	1600 (63)	1829 (72)	610 (24)	930 (2046)
30	F3	457 (18)	1600 (63)	2286 (90)	762 (30)	1050 (2310)
45	F3	457 (18)	1600 (63)	2286 (90)	762 (30)	1440 (3168)

Bypass Transformer

The optional bypass transformer is housed in the transfer section of any inverter UPS.

Notes

Actual systems may vary from these cabinet standards according to job-specific options or custom requirements.

All dimensions in **mm** (**inches**). Drawings are not to scale.

H_T transfer section height

H_I inverter section height

External maintenance bypass switch option **Me** requires an additional wall mount cabinet. Size to be determined at time of quote.

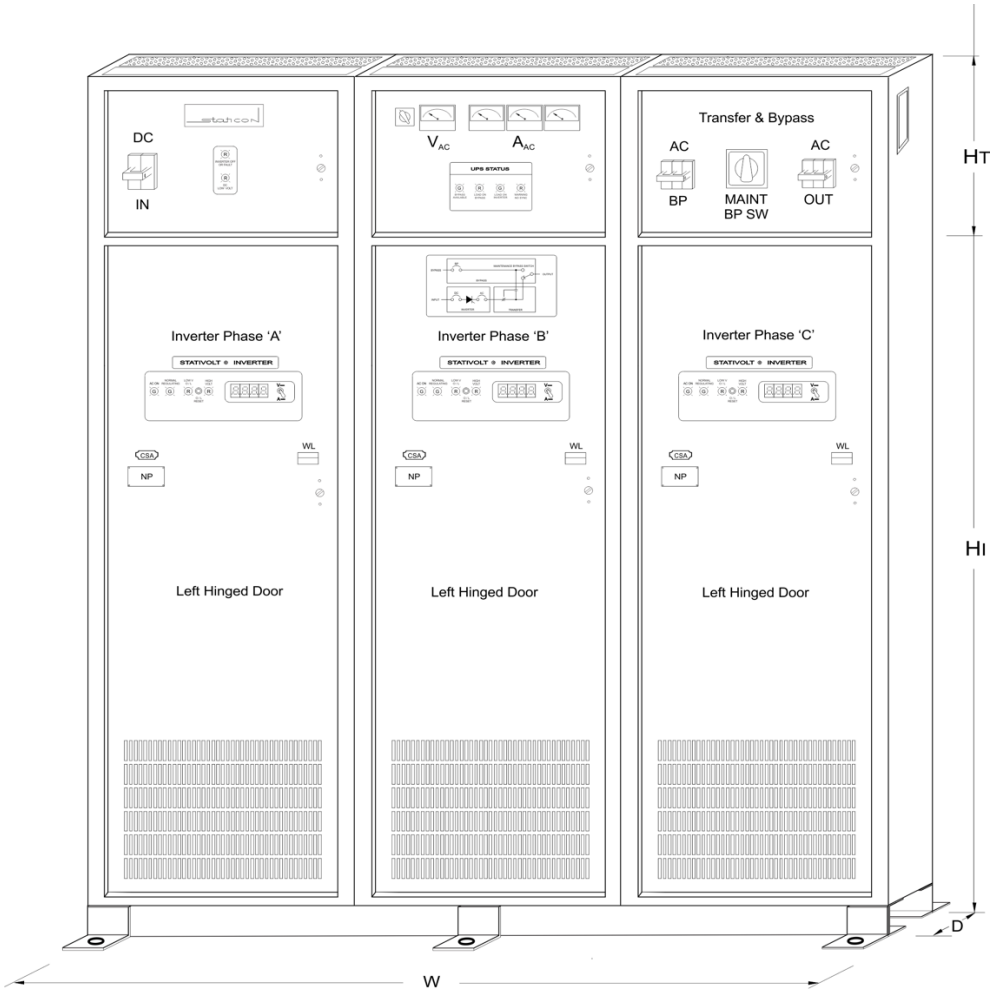
Construction

CSA / NEMA type 1 cabinets. Front access. 14 / 10 gage steel panels / mounting channels. Standard finish is ASA 61 grey, baked enamel.

CSA / NEMA 2 cabinets with drip shields (option **N2**) are an extra 152 mm (6 in) higher to allow for proper convection cooling under the drip shield.

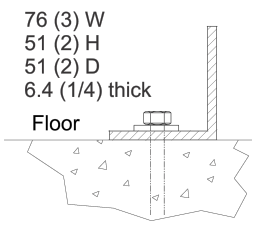
Top cable entry for floor mount cabinets.

Required Ventilation Clearance:
Floor Cabs: 305 / 610 (12 / 24) rear / top space.



(F3) Floor Mount

Floor Anchor Detail



Model Numbers

_ AC 6 A LA 48 206 F 125 B M __

- Options Codes (see below)
- (**M**)aintenance BP Switch *
- (**B**)attery Ripple Filter
- DC Nominal Voltage
- (**R**)ack or (**F**)loor mount
- Height (cm)
- Width (cm)
- On-Line (**LA**)uto or (**LM**)anual, or Standby (**SB**) Transfer *
- AC Output Voltage Code (see table at right)
- Inverter System kVA rating
- For ≥ 2 parallel inverters add # prefix

Voltage	Phase	Code
110-120-127	1	A
208-240	1	B
220-230-240	1	U
277	1	Q
347	1	N
480	1	G
600	1	H

60 Hz: no suffix
50 Hz: add suffix **X** to code

Options

DC Input Options	Code
Input ripple filter, AC ripple ≤ 1% rms (standard)	B
Input telecom noise filter, noise ≤ 32 dBrnC (24 & 48 V DC only)	C
DC low V shutdown, nominal to -17% DC input voltage range, adjustable	Ls
Ground leakage alarm, 2 red LEDs, 1 set of form 'C' contacts, 1-5 mA adjustable	G
Digital DC V & A meter, 1% accuracy, switch selectable	Dm
AC Output Options	
50 Hz output voltage frequency	see AC V code
Dual AC output voltage, 120 / 240 VAC (120-N-120)	Do
Transfer / Bypass Options *	
Staticon no-break, energy storage & contactor based auto transfer	standard
Static switch + contactor based, ≤ ¼ cycle break auto transfer	S
On-line (line redundant) auto return transfer (60 s delay)	LA
On-line (line redundant) manual return transfer	LM
Off-line (standby) auto return transfer (60 s delay)	SA
Off-line (standby) manual return transfer	SM
Maintenance bypass switch, manual make-before-break rotary cam switch (standard)	M
External manual maintenance bypass switch (separate rack or wall mount cabinet)	Me
Bypass step-down / isolation transformer	X
Annunciation Options	
Frequency meter, analog, 2% accuracy	F
Differential frequency sensor to monitor bypass power frequency *	Fd
Common system failure alarm, 1 extra set of form 'C' contacts	Ca
Audible system failure alarm	Aa
Digital monitoring PLC (RS485 or Ethernet output) (consult Staticon)	Plc
Digital multi-function AC output meter / communication module (consult Staticon)	Dmc
Utility Options	
Keyed door locks with handles	K
Top drip shield (NEMA 2, IP22)	N2
High interrupting-ampere capacity input / output / bypass breakers (consult Staticon)	I
I / O breaker visible contacts and lock attachments	V
Auxiliary contacts for any single input, output, bypass or distribution breaker	Ac
Zinc Rich powder coat paint primer for enhanced corrosion protection	Z
Packaging Options	
Tropical / humidity proofing, acrylic sprayed components and wires	T
Export packaging per international ocean freight requirements	